

PATENT

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APPLICANTS : Michael H. CHU, et al.
SERIAL NO. : 09/895,768
FILED : June 29, 2001
FOR : METHOD FOR THE MINIMIZATION OF ARTIFACTS
IN FULL FRAME ANIMATIONS TRANSFERRED TO
NTSC INTERLACED VIDEO
GROUP ART UNIT : 2628
EXAMINER : Jin Cheng WANG

M/S: AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT

Dear Sir:

The following remarks are respectfully submitted in response to the Office Action dated April 17, 2007.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 7 of this paper.

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method comprising:

Rendering of full frames at a whole number multiple of a digital video resolution value defining the number of pixels contained in each full frame and at a whole number multiple of a temporal resolution value defining the rate of display of the full frames on a computer screen;

Resizing said full frames to produce a plurality of frames that are antialiased; and

Blending each consecutive frame to produce a blended frame.

2. (Currently Amended) A method comprising:

Rendering of full frames at a whole number multiple of a digital video resolution value defining the number of pixels contained in each frame and at a whole number multiple of a temporal resolution value defining the rate of display of said full frames on a computer screen;

Resizing said full frames to produce a plurality of frames that are antialiased;

Blending each consecutive frame;

Blending the colors and images depicted in pixels that are within a gaussian blur radius value of a center pixel, wherein the number of pixels blended is proportional to a gaussian blur radius;

Separating each full frame into a first and second field, wherein the first field contains the even lines of a frame and the second field contains the odd lines of a frame; and

Alternately displaying the first and second fields of each frame to produce a viewable video, the first field of each frame with the second field of each frame.

3. (Original) The method of claim 1, wherein blending the colors and images depicted in pixels that are within a gaussian blur radius value of a center pixel is performed, wherein the number of pixels blended is proportional to a gaussian blur radius.

4. (Original) The method of claim 1, wherein separating each frame into a first and second field, the first field contains the even lines of a frame and the second field contains the odd lines of a frame.

5. (Original) The method of claim 1, wherein alternately displaying the first and second fields of each frame, the first field of each frame with the second field of each frame.

6. (Original) The method of claim 1, wherein resizing each full frame to produce antialiased frames is performed with bicubic interpolation.

7. (Original) The method of claim 1, wherein each pair of consecutive frames is blended by averaging corresponding pixel values of each frame.

8. (Original) The method of claim 1, wherein gaussian blurring of a non-zero pixel radius is performed that blends the colors and images depicted in pixels that are within a gaussian blur radius value of a center pixel.

9. (Original) The method of claim 2, wherein resizing each full frame to produce antialiased frames is performed with bicubic interpolation.

10. (Original) The method of claim 2, wherein each pair of consecutive frames is blended by averaging corresponding pixel values of each frame.

11. (Original) The method of claim 2, wherein gaussian blurring of a non-zero pixel radius is performed that blends the colors and images depicted in pixels that are within a gaussian blur radius value of a center pixel.

12. (Original) The method of claim 3, wherein the gaussian blur pixel radius is 0.2.

13. (Original) The method of claim 3, wherein the gaussian blur pixel radius is greater than 0.2.

14. (Original) The method of claim 3, wherein the gaussian blur pixel radius is less than 0.2.

15. (Previously Presented) The method of claim 1, wherein said rendering step is implemented using commercial software.

16-18 (Cancelled)

19. (Previously Presented) A video conversion system, the system comprising:
A computer terminal configured and operative to define the number of pixels contained in each frame of full frames that are to be rendered at a whole number multiple of a digital video

resolution value and that are to be rendered at a whole number multiple of a temporal resolution value defining the rate of display of full frames;

 said computer terminal is further configured and operative to resize said full frames to produce a plurality of frames that are to be antialiased and that are to be blends of each consecutive frame.

 A computer screen attached to said terminal.

20. (Cancelled)

21. (Previously Presented) The system of claim 19, wherein the colors and images depicted in pixels located at identically numbered pixel points in each frame are blended together.

22. (Original) The system of claim 21, wherein each frame is separated into a first and second field.

23. (Original) The system of claim 22, wherein the first field contains the even lines of a frame and the second field contains the odd lines of a frame.

24. (Original) The system of claim 23, wherein the first and second fields of each frame are interlaced and displayed alternately.

25. (Original) The system of claim 24, wherein each full frame is resized to produce antialiased frames using bicubic interpolation.

26. (Original) The system of claim 25, wherein each pair of consecutive frames is blended by averaging corresponding pixel values of each frame.
27. (Original) The system of claim 26, wherein gaussian blurring is performed that blends the colors and images depicted in pixels that are in proximity to one another in each frame.
28. (Original) The system of claim 27, wherein the gaussian blur pixel radius is 0.2.
29. (Original) The system of claim 28, wherein the gaussian blur pixel radius is greater than 0.2.

REMARKS/ARGUMENTS

Claims 1-15, 19, and 21-29 are pending and rejected in the application. Claims 16-18 and 20 have been canceled. Claims 1-15, 19, and 21-29 are rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claims 1-15, 19, and 21-29 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Claims 1-15, 19, and 21-29 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1-15, 19, and 21-29 are rejected under 35 U.S.C. § 102(b) as being anticipated by Adobe After Effects Version 4.1 for Macintosh and Windows (hereinafter Adobe After Effects). Claims 1, 4-7, 15, 19, and 21-29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Demos-565 in view of Adobe Dynamic Media Group, “A Digital Video Primer,” (June 2000) (hereinafter Adobe-Dynamics-Media-Group) and further in view of U.S. Patent No. 6,442,203 (hereinafter Demos-203) and Adobe After Effects.

Claim Rejections Under 35 U.S.C. § 101

Claims 1-15, 19, and 21-29 are rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Pages 9 and 10 of the Office Action dated April 17, 2007 assert that claims 1-15 are directed towards software when in fact they are directed towards a method that can be implemented in software. The fact that a claimed method might be implemented in software does not mean that the claims are directed towards the software itself, as asserted by the Office Action. Additionally, the Office Action asserts that claims 1 and 2 fail to recite either a physical transformation or a useful, tangible result. Claims 1 and 2 have been amended to more

clearly indicate that they produce a useful, tangible result. Accordingly, applicants respectfully request the rejections of claims 1-15 under 35 U.S.C. § 101 be withdrawn.

For at least all the reasons mentioned in relation to claims 1-15, applicants request the rejections of claims 19 and 21-29 under 35 U.S.C. § 101 be withdrawn.

Claim Rejections Under 35 U.S.C. § 112, first paragraph

Claims 1-15, 19, and 21-29 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Applicants assert that the claims comply with 35 U.S.C. § 112, first paragraph and direct the Examiner to the citations below.

The embodiment of independent claim 1 of the present invention generally describes a method comprising: rendering of full frames at a whole number multiple of a digital video resolution value (*see e.g.* page 3, lines 4-5) defining the number of pixels contained in each full frame and at a whole number multiple of a temporal resolution value defining the rate of display of the full frames on a computer screen (*see e.g.* page 3, lines 9-10); resizing said full frames to produce a plurality of frames that are antialiased (*see e.g.* page 3, lines 10-page 4, line 10); and blending each consecutive frame (*see e.g.* page 4, line 10-page 16).

The embodiment of independent claim 2 of the present invention generally describes a method comprising: rendering of full frames at a whole number multiple of a digital video resolution value (*see e.g.* page 3, lines 4-5) defining the number of pixels contained in each frame and at a whole number multiple of a temporal resolution value defining the rate of display of said full frames on a computer screen (*see e.g.* page 3, lines 9-10); resizing said full frames to produce a plurality of frames that are antialiased (*see e.g.* page 3, lines 10-page 4, line 10); blending each consecutive frame (*see e.g.* page 4, line 10-page 16); blending the colors and

images depicted in pixels that are within a gaussian blur radius value of a center pixel, wherein the number of pixels blended is proportional to a gaussian blur radius (*see e.g.* page 4, lines 17-20); separating each full frame into a first and second field, wherein the first field contains the even lines of a frame and the second field contains the odd lines of a frame (*see e.g.* page 5, lines 13-15); and alternately displaying the first and second fields of each frame, the first field of each frame with the second field of each frame (*see e.g.* page 5, lines 13-15).

The embodiment of independent claim 19 generally describes a video conversion system, the system comprising: a computer terminal configured and operative to defining the number of pixels contained in each frame of full frames that are to be rendered at a whole number multiple of a digital video resolution value and that are to be rendered at a whole number multiple of a temporal resolution value defining the rate of display of full frames (*see e.g.* page 3, lines 4-11); said computer terminal is further configured and operative to resize said full frames to produce a plurality of frames that are to be antialiased and that are to be blends of each consecutive frame (*see e.g.* page 3, lines 10-page 4, line 10 and page 4, line 10-page 16); and a computer screen attached to said terminal.

Claim Rejections Under 35 U.S.C. § 112, second paragraph.

Claims 1-15, 19, and 21-29 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office Action dated April 17, 2007 asserts that “claim 1 is vague and what kind of operations of resizing and blending perform cannot be ascertained.” Applicants do not understand the rationale of this rejection and assert the claims comply with 35 U.S.C. § 112 second paragraph as “resizing” and “blending” are terms of ordinary meaning in

the art. Accordingly, applicants request the rejection of claims 1-15, 19, and 21-29 under 35 U.S.C. § 112, second paragraph be withdrawn.

Claim Rejections Under 35 U.S.C. § 102(b)

Claims 1-15, 19, and 21-29 are rejected under 35 U.S.C. §102(b) as being anticipated by Adobe After Effects. In order for a prior art reference to properly support a 35 U.S.C. § 102(b) rejection, every element of the claimed invention must be identically shown in a single reference, and “the elements must be arranged as required by the claim.” MPEP 2131; *see also In re Bond*, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). Additionally, a prior art reference cannot anticipate unless it is enabling, meaning it must describe Applicants’ invention in sufficient detail to put a person of ordinary skill in the art in possession of the invention. *See In re Spada*, 911 F.2d 705, 15 U.S.P.Q.2d 1655 (Fed. Cir. 1990). Adobe After Effects does not show the elements of independent claims 1, 2, and 19 arranged in the same manner as in the claims, and it does not enable one of ordinary skill in the art to practice Applicants’ invention as embodied in claims 1, 2, and 19. Adobe After Effects, therefore, does not anticipate claims 1, 2, and 19.

Page 28 of the Office Action dated April 17, 2007 asserts that “commercial software” constitutes the prior art, but this assertion is not correct. Independent claims 1 and 2 of the present application are not claiming the commercial software but are rather claiming a novel method of using that software. It is well established in patent law that new uses of old products are patentable. *See e.g. Perricone v. Medicis Pharmaceutical Corp.*, 432 F.3d 1368, 1378 (Fed. Cir. 2005) (“New uses of old products or processes are indeed patentable subject matter.”); *see also In re King*, 801 F.2d 1324, 1326 (Fed. Cir. 1986)(“principles of inherency do not prohibit a process patent for a new use of an old structure.”).

Accordingly, for at least the reasons mentioned above, applicant requests the rejections of independent claims 1, 2, and 19 under 35 U.S.C. § 102(b) be withdrawn. Applicants further request that the related rejections of dependent claims 3-15 and 20-29 be withdrawn.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1, 4-7, 15, 19, and 21-29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Demos-565 in view of Adobe Dynamic Media Group and further in view of Demos-203 and Adobe After Effects.

35 U.S.C. § 103(a) states:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter **as a whole** would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

It is well established in the case law and apparent from a literal interpretation of 35 U.S.C. § 103(a) that an obviousness analysis must focus on the claimed invention as a whole, and not on the individual elements that comprise the invention. *See eg. Custom Accessories Inc. v. Jeffrey-Allan Industries, Inc.*, 1 U.S.P.Q.2d 1196 (Fed. Cir. 1986) (“Casting an invention as ‘a combination of old elements’ leads improperly to an analysis of the claimed invention by the parts, not by the whole.”).

In rejecting applicants’ claims under 35 U.S.C. § 103(a), the examiner has not looked at the claims as a whole but rather has attempted to find the various elements in various references. Examiner has found a part of Adobe-Dynamics-Media-Group that he

asserts teaches “resizing each full frame to produce a plurality of frames that are antialiased,” but the plain language of applicants’ claim shows that the “full frame” must first be rendered in a specific way. Neither Demos-565, Adobe-Dynamics-Media-Group, nor a combination of the two, teaches or even suggests rendering the frames as claimed by the applicants and then resizing those claims as taught by applicants.

Applicants assert that the references put forth by Examiner do not teach the elements of applicants’ invention, but even assuming *arguendo* that they do, the fact that examiner has found all the elements in various references does not render applicants’ invention obvious. The examiner has failed to show that the references, either individually or in combination, teach applicants’ claimed method as a whole because the Examiner has not given and the references do not contain any motivation to combine the various elements into the method that applicants claim.

In addition to there being no motivation to combine, Adobe-Dynamics-Media-Group does not teach the elements of applicants’ claims that examiner asserts it does. Adobe-Dynamic-Media-Group merely provides an overview of various functions that can be performed with desktop software. Examiner has attempted to read Applicants’ claimed invention on Adobe-Dynamic-Media-Group by finding random functions of various software packages that teach the individual elements of claim 1, but Adobe-Dynamic-Media-Group contains no support for piecing any of these various functions into a method.

For example, Adobe-Dynamic-Media-Group points out that resizing can be performed with desktop software, but it does not teach resizing as being a step in a method. The wording of Applicants’ claim makes it clear that resizing is a step of a method and is being done to frames that have been previously rendered “at a whole number multiple of a digital video resolution

value defining the number of pixels contained in each frame and at a whole number multiple of a temporal resolution value defining the rate of display of full frames on a computer screen.” The section of Adobe-Dynamics-Media-Group cited by Examiner does not link the resizing of the frames to the rendering of the frames which is necessary in order to teach the method of claim 1.

Similarly, Adobe-Dynamics-Media-Group does not teach “blending each consecutive frame” in the context of a method. The section cited by Examiner reads as follows:

There are three different frame types in MPEG-2. These are known as I, P, and B frames. I stands for “intraframe” encoding and works just like a DV frame of video. The P frame is a “predicted” frame. It is compounded from the frames previous to it. B is for “bi-directional” frame. This means that not only is the B frame computed from previous frames, it can also use frames that come after it. More data must be preserved to describe I frames, making them the “largest,” whereas P frames can be less than a tenth of that size. B frames are the smallest. Because the P and B frames are calculated from the I frames, you can’t just have one I frame and the rest P’s and B’s. There must be I frames interspersed or else the accumulated error becomes too great and the image quality suffers.

This does not teach blending consecutive frames that have been rendered and resized as recited in claim 1. Adobe-Dynamic-Media-Group makes no mention of how the frames were rendered or that the frames were resized before being converted to I, B, and P frames. As with the other elements of claim 1, Examiner is taking random pieces of the reference and reading them on the claims’ elements but is ignoring the fact that these pieces are not arranged in the same manner as in the claim and do not enable one of ordinary skill in the art to practice Applicants’ invention; both of which are necessary requirements to render a claim obvious under 35 U.S.C. § 103(a).

Additionally, Adobe-Dynamics-Media-Group does not teach the claim element of “blending each consecutive frame” at all, but rather teaches MPEG-2 video compression. The I, P, B format of MPEG-2 does not rely on blending frames. Instead it uses intraframes (I), predicted frames (P), and bi-directional frames (B). I frames contain all

the data of a full frame. P and B frames contain data needed to modify another I, P, or B frame, and therefore contain substantially less data than an I frame. The majority of frames in any given sequence are going to be extremely similar to the frames before and after so it is unnecessary for every frame to contain redundant data, which would be the case if every frame were an I frame. MPEG-2 compression works by eliminating redundant data, which is completely different from blending. It is therefore incorrect of examiner to assert that Adobe-Dynamics-Media-Group teaches “blending each consecutive frame.”

In light of the foregoing arguments, applicants assert that independent claims 1 and 19 are allowable, and claims 4-7, 15, and 21-26 are allowable as depending from allowable independent claims. It is respectfully requested that rejections under 35 U.S.C. § 103(a) be withdrawn.

For all the above reasons, the applicants respectfully submit that this application is in condition for allowance. A Notice of Allowance is earnestly solicited.

The Examiner is invited to contact the undersigned at (408) 975-7500 to discuss any matter concerning this application.

The Office is hereby authorized to charge any additional fees or credit any overpayments under 37 C.F.R. §1.16 or §1.17 to Deposit Account No. **11-0600**.

Respectfully submitted,

KENYON & KENYON LLP

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By: /Jeffrey R. Joseph/
Jeffrey R. Joseph
(Reg. No. 54,204)
Attorney for Intel Corporation

KENYON & KENYON LLP
333 West San Carlos Street, Suite 600
San Jose, CA 95110

Telephone: (408) 975-7500
Facsimile: (408) 975-7501